CLAIMS

We claim:

1. An activated modular grafted polymeric surface.

2. The activated modular grafted polymeric surface according to claim 1, wherein the polymer is a co-polymer of polyethylene and polypropylene (PMA) or a modified branched polyolefin.

3. The activated modular grafted polymeric surface according to claim 2, wherein the polymer is a modified branched polyolefin, or a derivative, blend or copolymer thereof, modified by graft polymerization.

4. The activated modular grafted polymeric surface according to claim 3, wherein the branched polyolefin is a polyalkylalkene.

5. The activated modular grafted polymeric surface according to claim 4, wherein the polyalkylalkene is poly-(4-methylpentene-1).

6. The activated modular grafted polymeric surface according to claim 1, wherein the graft polymerization is gamma-irradiation graft polymerization, ozone-induced graft polymerization, plasma-induced graft polymerization, UV-initiated graft polymerization or chemical-initiated graft polymerization.

7. The activated modular grafted polymeric surface according to claim 3, wherein the graft polymer is selected from the group consisting of polyvinyls, polyvinylalcohols, polyacrylates, polymethacrylates, polyacrylamides, polyethylkene glycols, polylactic acids, and derivatives, blends and copolymers thereof.

8. The activated modular grafted polymeric surface according to claim 7, wherein the graft polymer is polystyrene.

9. The activated modular grafted polymeric surface according to claim 7, wherein the graft polymer is a polyvinylalcohol.

10. The activated modular grafted polymeric surface according to claim 7, wherein the graft polymer is polyacrylic acid.

11. The activated modular grafted polymeric surface according to claim 1, wherein a reagent is bound to the grafted polymeric surface selected from the group consisting of triphenylphosphine, a reductant, an oxidant, a chelating metal, a scavenger, and a catalyst.

12. The activated modular grafted polymeric surface according to claim 11, wherein the chelating metal is nickel or calcium.

13. The activated modular grafted polymeric surface according to claim 11, wherein the scavenger is a nucleophilic group.

14. The activated modular grafted polymeric surface according to claim 13, wherein the nucleophilic group is aminomethyl or hydrazino.

15. The activated modular grafted polymeric surface according to claim 11, wherein the scavenger is an electrophilic group.

16. The activated modular grafted polymeric surface according to claim 15, wherein the electrophilic group is isocyanate, tosyl chloride, or benzaldehyde.

17. The activated modular grafted polymeric surface according to claim 11, wherein the catalyst is dimethylaminopyridine.

18. The activated modular grafted polymeric surface according to claim 11, wherein the graft is polyacrylic acid and the reagent is a chelating metal.

19. The activated modular grafted polymeric surface according to claim 1, wherein the activating moiety is aldehyde, carboxylate, amino, hydroxide, biotin, thiol, tosyl acid, tosyl chloride, hydrazino, or isocyanate.

20. The activated modular grafted polymeric surface according to claim 19, wherein the activating moiety is aldehyde.

21. The activated modular grafted polymeric surface according to claim 1, wherein one or more spacer sequences, which may be the same or different, is present between the activating moiety and the grafted polymer.

22. The activated modular grafted polymeric surface according to claim 19, wherein one or more spacer sequences, which may be the same or different, is present between the aldehyde and the grafted polymer.

23. The activated modular grafted polymeric surface according to claim 1, wherein the reagent has one of the structures set out in Table 1.

24. The activated modular grafted polymeric surface according to claim 1, selected from the group consisting of

(a) a benzaldehyde polystyrene lantern;

(b) a benzaldehyde polystyrene lantern, coupled to streptavidin or horseradish peroxidase; and

(c) a nickel-chelating polyacrylic acid gear.

25. The activated modular grafted polymeric surface according to claim 1, wherein the reagent is capable of binding an amine compound capable of Schiff base formation.

26. The activated modular grafted polymeric surface according to claim 25, wherein the amine compound is a biotinylated molecule, a protein, a peptide, a lectin, an oligonucleotide, a sugar or an enzyme.

27. The activated modular grafted polymeric surface according to claim 26, wherein the biotinylated molecule is a peptide, protein, oligonucleotide, lipid or sugar.

28. The activated modular grafted polymeric surface according to claim 26, wherein the protein is streptavidin.

29. The activated modular grafted polymeric surface according to claim 26, wherein the enzyme is horseradish peroxidase.

30. A method of affinity capture, presentation or preparation of a biomolecule, comprising the step of exposing the biomolecule or a precursor thereof to an activated modular grafted polymeric surface according to claim 1.

31. The method according to claim 30, wherein the biomolecule is selected from the group consisting of proteins, oligonucleotides, nucleic acids, peptides, and lectins.

32. The activated modular grafted polymeric surface according to claim 1, in a modular three-dimensional form.

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33. The grafted polymeric surface according to claim 32, wherein the modular three-dimensional form is a lantern, crown, gear, pin, puck, disc, bead, microtitre plate or sheet.